

CLAIMS

What is claimed is:

1. A method for prioritizing frames for transmission from a local node according to frame type, comprising:
 - determining if a remote node is open;
 - if the remote node is open, then determining if there are contexts for the remote node in which the contexts are arranged in at least first and second queues.
2. The method of Claim 1, further comprising, if no contexts reside on the queues for the remote node, then examining an on-chip context cache to determine a context for the remote node.
3. The method of Claim 2, further comprising, if there are contexts in the on-chip context cache for the remote node, then retrieving and queuing cached context for the remote node.
4. The method of Claim 3, further comprising, determining if there is context on the data queue for the remote node.
5. The method of Claim 4, further comprising, if there is context on the data queue for the remote node, then prioritizing context on the data queue for the lowest direct memory access latency for the remote node.
6. The method of Claim 5, further comprising prioritizing an earliest queued context for the remote node with the highest weight.
7. The method of Claim 4, further comprising, if there is no context on the data

queue for the remote node, then prioritizing an earliest queued context for the remote node with the highest weight.

8. The method of Claim 6, wherein the remote node is a device on a Fibre Channel Arbitration Loop.

9. The method of Claim 8, wherein the method is performed by another device on the Fibre Channel Arbitration Loop.

10. The method of Claim 9, wherein the contexts are arranged in a third queue.

11. The method of Claim 10, wherein each of the first, second, and third queues stores a unique type of frame.

12. The method of Claim 11, wherein the contexts are arranged in fourth and fifth queues.

13. The method of Claim 12, wherein the first, second, third, fourth, and fifth queues are extended link service, manual, response, transfer ready, and data, respectively.

14. The method of Claim 13, wherein the first queue has a higher priority than the second queue and the second queue has a higher priority than the third queue.

15. A method for prioritizing frames for transmission from a local node for a fibre channel arbitrated loop, comprising:

determining a set of transmit frame types, the set being at least two in number;

assigning a priority to each of the transmit frame types of the set;

preparing frames for transmission;

examining the frames for transmission to determine transmission type; and

placing context about the frame for transmission in a queue corresponding the determined transmission type,

wherein each of the determined set of transmit frame types has a unique queue.

16. The method of Claim 15, further comprising determining if a device is open with a desired remote node.

17. The method of Claim 16, further comprising, if a device is open with the desired remote node, then prioritizing the earliest queued context with the highest priority.

18. The method of Claim 17, further comprising arbitrating for the desired remote node.

19. The method of Claim 16, further comprising, if a device is not open with the desired remote node, determining if there is context on any queue corresponding to the determined set of transmit frame types.

20. The method of Claim 19, further comprising, if there is context on any queue corresponding to the determined set of transmit frame types, then determining if there is context on a data queue for the desired remote node.

21. The method of Claim 20, further comprising prioritizing an earliest queued context with the highest weight for the desired node.
22. The method of Claim 19, further comprising, if there is no context on any queue corresponding to the determined set of transmit frame types, then determining if there is context on queues that can transfer.
23. The method of Claim 22, further comprising, if there is context on any queue that can transfer, then determining if there is context on the data queue that can transfer.
24. The method of Claim 23, further comprising, if there is context on the data queue that can transfer, then prioritizing context on the data queue that is capable of transferring by the lowest direct memory access latency.
25. The method of Claim 23, further comprising prioritizing an earliest queued context that is capable of transferring by the highest weight.

26. A system of communicatively coupled devices, comprising:

a plurality of nodes, each of the plurality of nodes communicatively coupled to all other nodes of the plurality of nodes in a loop topology, each of the plurality of nodes capable of receiving information from every other node of the plurality of nodes and capable of transmitting information to every other node of the plurality of nodes per loop, such that no two nodes transmit to a same node in a loop, wherein communications between nodes uses multiple queues to determine priority for transmitting frames of information.

27. The system of communicatively coupled devices of Claim 26, wherein the loop topology is a Fibre Channel Arbitration Loop.

28. The system of Claim 26, wherein the multiple queues include a response queue.

29. The system of Claim 28, wherein the multiple queues include an extended link service queue.

30. The system of Claim 29, wherein the multiple queues include a transfer ready queue.

31. The system of Claim 30, wherein the multiple queues include a manual queue.

32. The system of Claim 31, wherein the multiple queues include a data queue.

33. The system of Claim 32, wherein the multiple queues include a command queue.

- 34. The system of Claim 26, wherein the plurality of nodes are two to 126 in number.
- 35. The system of Claim 26, wherein the plurality of nodes are in a dual loop arrangement such that each node receives and transmits information to each of two nodes through two loops in which information flows in opposite directions.
- 36. The system of Claim 26, wherein a node corresponds to one device.
- 37. The system of Claim 26, wherein a node corresponds to a plurality of devices.